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A CONSTANT LEVELLING DEVICE FOR AN ATOMIZER TYPE SPRAYER

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In laboratory tests with parasites of the black scale it was found that the atomizer type of gun with a suction feed would not deliver the spray at a uniform rate unless the liquid in the supply vessel was maintained at a constant level. It was also found that the rate of delivery would alter the type of deposit on a lemon surface. As it was necessary to standardize the procedure, a device was developed to maintain the liquid at a constant level in the supply vessel. The unit described herein was designed for water-soluble material.

The spray gun employed was of the atomizer type with a suction feed similar to the one commonly used in lacquer application. As the atomizer requires a large volume of air, it was found necessary to use a large diaphragm reducing valve. This type of valve is commonly used by gas companies in rural service. It will maintain a constant pressure for different rates of delivery, thus eliminating the necessity for readjustment.

The constant levelling device is shown diagrammatically in figure 1, and a general view of the combined units is shown in figure 2. It consists essentially of a reservoir inverted in the spray vessel. The level of the liquid is maintained in the spray vessel by displacement from the reservoir. In the construction of the reservoir it is necessary to use a large tube to obtain a steady flow of the spray solution. The tube is cut approximately 10 degrees off the horizontal to permit a small amount of air to enter the tube.

A flat 8-ounce bottle (A, fig. 1) was used for the reservoir, to permit it to be close-coupled to the spray vessel. With this arrangement, variation of the liquid level in the spray vessel when

bubbles of air enter the reservoir through the connection tube is minimized. A brass tube (D), three-fourths of an inch outside diameter, was soldered to the screw cap of the bottle (B). It was 3-1/2 inches long, with the lower end cut at approximately 10 degrees off the surface of the liquid. A brass collar (C), approximately three-fourths of an inch inside diameter and 1 inch high, was soldered to the cap of the spray vessel. The collar supports the reservoir bottle in a fixed position. The atomizer is connected to the spray vessel by means of a compression nut (E).

In operating the device the reservoir containing the spray solution is inverted in the lid of the spray vessel. As soon as the liquid in the spray vessel has reached as high as the bottom of the tube a constant level will be maintained for the application.

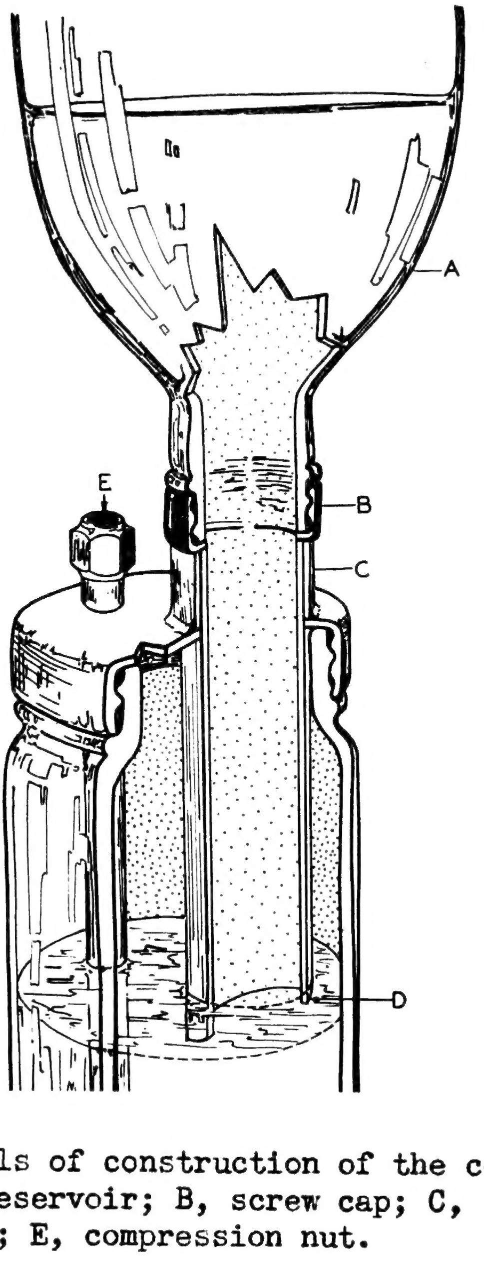

Figure 1.--Details of construction of the constant levelling device. A, Reservoir; B, screw cap; C, brass collar; D, brass tube; E, compression nut.

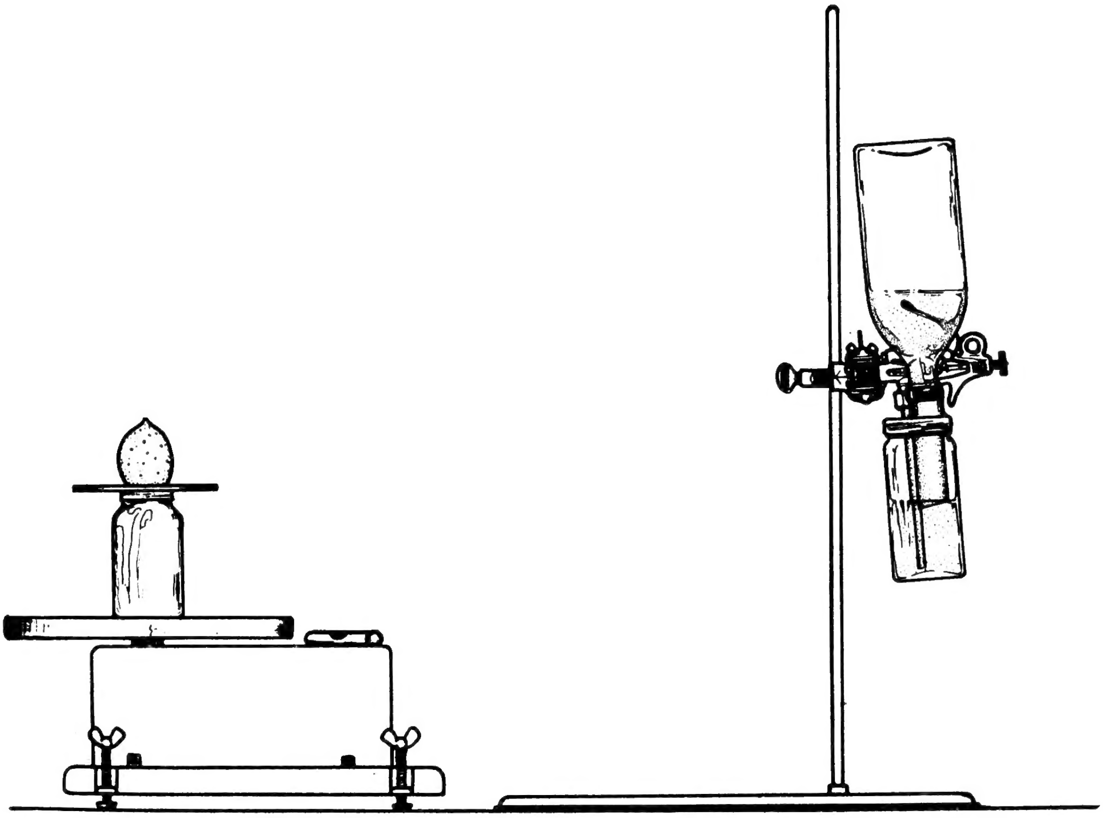

Figure 2.--General view of the spraying apparatus.